

## University of Massachusetts Amherst ScholarWorks@UMass Amherst

---

Doctor of Nursing Practice (DNP) Projects

College of Nursing

---

2014

# Eat Well, Live Actively: A Primary Care Interventional Program for the Treatment of Childhood Obesity

Julianne M. Randlemon  
*University of Massachusetts - Amherst*

Follow this and additional works at: [https://scholarworks.umass.edu/nursing\\_dnp\\_capstone](https://scholarworks.umass.edu/nursing_dnp_capstone)



Part of the [Family Practice Nursing Commons](#), and the [Pediatric Nursing Commons](#)

---

Randlemon, Julianne M., "Eat Well, Live Actively: A Primary Care Interventional Program for the Treatment of Childhood Obesity" (2014). *Doctor of Nursing Practice (DNP) Projects*. 41.

Retrieved from [https://scholarworks.umass.edu/nursing\\_dnp\\_capstone/41](https://scholarworks.umass.edu/nursing_dnp_capstone/41)

This Open Access is brought to you for free and open access by the College of Nursing at ScholarWorks@UMass Amherst. It has been accepted for inclusion in Doctor of Nursing Practice (DNP) Projects by an authorized administrator of ScholarWorks@UMass Amherst. For more information, please contact [scholarworks@library.umass.edu](mailto:scholarworks@library.umass.edu).

Eat Well, Live Actively:

A Primary Care Interventional Program for the Treatment of Childhood Obesity

Julianne Randlemon, RN, BSN

Submitted to the Graduate School of the

University of Massachusetts: Amherst in partial fulfillment

Of the requirements for the degree of

DOCTOR OF NURSING PRACTICE

May 2014

School of Nursing

## Table of Contents

<b>ABSTRACT .....</b>	<b>4</b>
<b>PRACTICE GUIDELINE ANALYSIS.....</b>	<b>7</b>
THE AMERICAN ACADEMY OF PEDIATRICS .....	8
US PREVENTIVE SERVICES TASK FORCE.....	10
THE ENDOCRINE SOCIETY .....	11
MICHIGAN QUALITY IMPROVEMENT CONSORTIUM .....	13
<b>LITERATURE REVIEW .....</b>	<b>15</b>
METHODS .....	15
FAMILY FOCUSED INTERVENTIONS.....	16
LIFESTYLE MODIFICATION INTERVENTIONS.....	17
PROVIDER-TARGET INTERVENTIONS .....	18
PREVENTION INTERVENTIONS.....	19
RESEARCH SYNTHESIS.....	20
<b>CONCEPTUAL FRAMEWORK .....</b>	<b>20</b>
APPLICATION .....	21
<b>SETTING .....</b>	<b>22</b>
COMMUNITY.....	22
TARGET POPULATION .....	24
STAKEHOLDERS .....	25
<b>DESIGN &amp; METHODS .....</b>	<b>26</b>
DESIGN .....	26
METHOD OF EVALUATION .....	30
DATA COLLECTION & ANALYSIS.....	31
<b>IMPLEMENTATION .....</b>	<b>32</b>
PROTECTION OF HUMAN SUBJECTS .....	33
<b>RESULTS.....</b>	<b>33</b>
REACTION .....	34
LEARNING AND BEHAVIOR .....	34
RESULTS .....	35
<b>LIMITATIONS.....</b>	<b>35</b>
<b>DISCUSSION.....</b>	<b>37</b>
<b>REFERENCES.....</b>	<b>39</b>
<b>APPENDIX A .....</b>	<b>43</b>
<b>APPENDIX B .....</b>	<b>44</b>
<b>APPENDIX C .....</b>	<b>45</b>
<b>APPENDIX D.....</b>	<b>46</b>
<b>APPENDIX E .....</b>	<b>47</b>
<b>APPENDIX F.....</b>	<b>50</b>
<b>APPENDIX G .....</b>	<b>51</b>
<b>APPENDIX H.....</b>	<b>52</b>

<b>APPENDIX I .....</b>	<b>54</b>
<b>APPENDIX J.....</b>	<b>56</b>
<b>APPENDIX K.....</b>	<b>58</b>
<b>APPENDIX L.....</b>	<b>59</b>
<b>APPENDIX M .....</b>	<b>60</b>
<b>APPENDIX N.....</b>	<b>61</b>
<b>APPENDIX O.....</b>	<b>62</b>
<b>APPENDIX P .....</b>	<b>63</b>
<b>APPENDIX Q.....</b>	<b>64</b>
<b>APPENDIX R.....</b>	<b>65</b>
<b>APPENDIX S.....</b>	<b>68</b>
<b>APPENDIX T .....</b>	<b>71</b>
<b>APPENDIX U.....</b>	<b>73</b>

### **Abstract**

Over the last thirty years, childhood obesity has become one of the presiding diseases in the pediatric population. Last year the CDC (2012) reported that 12.5 million children under the age of five were not only overweight but also obese. This growing trend has been inadequately addressed by the United States preventive healthcare system. The pandemic has continued to spread: America's obese children have substantially contributed to the ever-growing fiscal demands of health care in the United States. Olshansky et al. (2005) suggest this will in turn translate into the first generation of American adults that will be sicker and die younger than their parents.

Utilizing the current practice guidelines for the screening, prevention, and treatment of childhood obesity reveals that the complexity of the problem necessitates an equally intricate solution. Adequate identification through screening and immediate initiation of conservative treatment is recommended. Increased family participation is also supported. The American Academy of Pediatrics, United States Preventive Services Task Force, and The Endocrine Society all support holistic primary care interventions as the most effective in treating and preventing childhood obesity.

The "Eat Well, Live Actively" program was created in alliance with these clinical guideline recommendations. The "Eat Well, Live Actively" program was designed with four main components: two visits with the pediatrician, two visits with a dietician, bi-weekly classes at the YMCA, and weekly follow-up communication with the program coordinator.

Anthropomorphic data was collected pre- and post-intervention: height, weight, and BMI percentage. A pre- and post- healthy lifestyle questionnaire was also completed. Lastly, participant and parent satisfaction surveys were collected at the conclusion of the program.

Due to significant data variance and difficulty recruiting and retaining participants, the results from this program are not statistically significant and proved inconclusive. Additionally, the impact of poverty on the sample size of this study was unexpected and inadequately prepared for. This study confirmed the findings reflected in the literature: controlling for the many factors that influence childhood obesity is very difficult. Future research is needed in the primary care setting that focuses on supporting and minimizing the socioeconomic difficulties and disparities that convolute the path to establishing a model for the prevention and treatment of childhood obesity.

*Keywords:* childhood obesity, primary care, best practice guidelines, interventions

### Eat Well, Live Actively:

#### A Primary Care Interventional Program for the Treatment of Childhood Obesity

In the last 30 years, the number of obese children has tripled (CDC, 2012). In the United States, childhood obesity is no longer an epidemic affecting those of lower socioeconomic status, living in inner cities, or from a racial minority. Childhood obesity has become widespread; no child in the United States is spared all the risks.

The CDC (2012) reported that over 12.5 million children under the age of five are not only overweight, but actually obese. Cawley & Meyerhoefer (2012) report that such staggering increases in obesity rates have resulted in nearly \$190.2 billion annually in obesity-related healthcare costs in the United States alone: childhood obesity accounting for more \$14 billion in direct medical costs. Moreover, Ogden et al. (2010) cite that 70% of overweight children in America have at least one cardiovascular risk factor. These 12.5 million overweight children with cardiovascular risks are 80% more likely to be overweight as adults (Ogden et al., 2010). As reported by Olshansky et al. (2005) if the current epidemic of childhood obesity is not reversed or at least halted, this generation of children is in danger of becoming the first generation of Americans that are sicker and die younger than their parents. The battle against obesity and for lifelong health and prosperity begins in childhood. Over 12.5 million children depend upon comprehensive efforts to oppose this serious issue.

In the face of such a task, deciphering a method to achieve success can be difficult. Childhood obesity will not be resolved with just one intervention—the vastness and complexity of this disease requires a multi-pronged approach with assessments and interventions at many different levels: primary care to acute care to schools and public health/outreach. This capstone implemented the “Eat Well, Live Actively” program in the Primary Care setting. Implementation

of the most current, evidence-based practice guideline and research was the foundation for this capstone.

### **Practice Guideline Analysis**

Clinical practice guidelines exist to provide a comprehensive approach to deliver evidence-based patient care. Such guidelines are developed based upon analysis and compilation of interventional research studies' data and expert opinions in the field. The value of a guideline is only as good as the data utilized in its development. For this reason, the AGREE Instrument was originally published in 2003 by an international group of developers and researchers: the Agree Collaboration. The intention of the Collaboration and the AGREE Instrument is to provide criteria for an evaluation of clinical practice guidelines. The AGREE Instrument is based upon 23 different criteria from six different domains: Scope and Purpose, Stakeholder Involvement, Rigor of Development, Clarity of Presentation, Applicability, and Editorial Independence (AGREE, 2009).

The Scope and Purpose domain of the instrument is designed to critique the overall aim of the guideline and the target population. The second domain, Stakeholder Involvement, evaluates the appropriateness of the stakeholders used to create the guideline. Thirdly, Rigor of Development critiques the processes utilized in the analysis of data and creation of the guideline. Clarity of Presentation examines the language, structure, and format of the guideline. Applicability pertains to the ease of implementation, including the anticipated barriers and strategies for improvement. Lastly, Editorial Independence ensures that the recommendations put forth within the guideline are not rooted in conflicting interests.

Currently, four professional clinical guidelines are available for practitioner use in the screening and treatment of childhood obesity: the American Academy of Pediatrics (2007), the



US Preventive Services Task Force (2010), the Endocrine Society (2008), and the Michigan Quality Improvement Consortium (2012). The AGREE Instrument (2009) was utilized to evaluate the quality of each of these guidelines in each of the six domains. Additionally, a brief summary of the recommendations from each of the guidelines is provided for analysis and comparison. Please reference Appendix A for AGREE scores.

### **The American Academy of Pediatrics**

**Summary of the Guideline.** The American Academy of Pediatrics' (AAP) expert committee convened in 2007 to update the 1998 clinical guidelines for the screening and treatment of overweight and obese children. The committee recommended the use of the Chronic Care Model (Appendix B) in the management of overweight children due to the complexities and chronic-nature of the struggles associated with the disease process. The use of Body Mass Index (BMI) measurements annually to classify patients appropriately was also recommended: overweight (>85<sup>th</sup> – 94<sup>th</sup> %) or obese (>95<sup>th</sup> %). In addition, annual appointments were suggested to consist of a dietary assessment, physical activity assessment, screen time assessment, and complete family history. Laboratory work should be based upon a patient's BMI and risk factors (Appendix C). Lastly, the AAP and the expert committee recommended a staged treatment approach (Appendix D): Prevention Plus, Structured Weight Management, Comprehensive Multidisciplinary Intervention, and lastly, Tertiary Care Intervention. Each of these stages utilizes the Chronic Care Model by incorporating the family and numerous disciplines and outside/community resources.

**Critique.** The first domain of the AGREE Instrument (2009) is Scope and Purpose. In examination of this guideline, the intention and target population of this guideline is simply and clearly written. Stakeholder Involvement is reflected in the diversity of the Expert Committee,

which consisted of 15 representatives from professional organizations (targeted users), experienced scientists and clinicians (content experts), and various writing groups (Barlow, 2007). Thus, satisfying the Stakeholder Involvement domain.

The Rigor of Development domain is extensive; nonetheless, the AAP's committee attempted to meet all of the criteria. While it was not the intention of the AAP's Expert Committee to complete an extensive and methodical literature review, each of the Expert Committee members from various disciplines provided expert opinions and research in the field of childhood obesity for consideration and analysis. Reportedly, experts were nominated into three writing groups to examine the expert opinions and formulated subsequent recommendations with three sublevels of ratings: consistent with evidence, mixed evidence, not examined. All the same, Barlow (2007) reported, "...science continues to lag behind the obesity epidemic, many gaps in evidence-based recommendations remain" (p. S165). The lack of sufficient randomized, interventional trials examining effective interventions to manage childhood obesity negatively impacted the quality of The Rigor of Development of the AAP's (2007) guideline.

In the fourth domain, Clarity of Presentation, this guideline is successful: recommendations for screening, treatment and prevention are clearly delineated in four specified categories with accurate strength of the recommendation listed both in the guideline and in the appendix. The Applicability of the guideline also includes a brief discussion about the barriers to application (i.e. financial) with tools to overcome these barriers to facilitate successful guideline implementation. Lastly, the Editorial Independence of the AAP's 2007 Guideline is not clearly reported.

## US Preventive Services Task Force

**Summary of the Guideline.** The US Preventive Services Task Force (USPSTF) published a childhood obesity screening guideline in 2010. The USPSTF (2010), unlike the AAP (2007), found insufficient evidence to recommend BMI screening in children younger than 6 years old and found no evidence to suggest the appropriate intervals for screening. The USPSTF (2010) did find sufficient evidence to support the use of BMI measurements as acceptable means to identify children (>6years of age) with excess weight. This guideline (2010) recommends moderate-to-high intensity programs (at least 25 hours of contact with child and/or family over 6 months). These comprehensive weight-management programs should incorporate counseling, targeted dietary changes, and increased physical activity. Additionally, the USPSTF (2010) identifies parental involvement as a key success indicator in the management of overweight children.

**Critique.** The Scope and Purpose (AGREE, 2009) of the USPSTF (2010) guideline is clearly identifiable: children and adolescents. In the domain of Stakeholder Involvement, this guideline is also successful: the intended users and intended patient population is listed independently with corresponding headings. Unlike the AAP's (2007) guideline, the USPSTF (2010) illustrated careful detail to satisfy the AGREE's (2009) domain of Rigor of Development. The USPSTF (2010) completed manual searches of available weight management trials and their reference lists. A meta-analysis was utilized to compile and investigate the evidence gathered from this systematic review. Also, the USPSTF (2010) created a 'Recommendation Grid' in which the 'net benefit' to the patient was determined.

The Clarity of Presentation in the USPSTF (2010) guideline is given in a summary at the end of the guideline, broken into subcategories for ease of interpretation: Patient Population

Under Consideration, Screening Tests, Treatment, and Screening Intervals. The Applicability of the guideline was satisfied as the USPSTF (2010) included an ‘Implementation Strategy’ and ‘Implementation Tools’ reference for providers. Lastly, the Editorial Independence of the USPSTF (2010) guideline is stated through the clear listing of the source of funding (United States Government) and by including a financial disclosure statement/conflict of interest statement all members were required to uphold during the development of the guideline.

### **The Endocrine Society**

**Summary of the Guideline.** The Endocrine Society published a clinical practice guideline in 2008 based upon recommendations from the society’s Expert Committee. The Endocrine Society (2008) recommends the routine use of BMI measurements for the diagnosis of overweight and obese children. The recommended parameters are the same as those delineated by the AAP (2007) (greater than the 85<sup>th</sup> % but <95<sup>th</sup> %, and >95<sup>th</sup> % respectfully). The Endocrine Society (2008) recommends against routine laboratory screening but did recommend that all children with a BMI >85<sup>th</sup> % to be evaluated for co-morbidities and referral to a geneticist to rule out obesity due to a syndromic etiology.

In the treatment of overweight and obese children, The Endocrine Society (2008) recommends that clinicians prescribe lifestyle modifications that involve the entire family. Dietary recommendations include avoiding sweetened beverages of all kinds, limiting consumption of fast food, portion control, and consumption of regular meals (especially breakfast). Physical activity recommendations include at least 60 minutes of moderate to vigorous activity per day. Screen time should be limited to less than 2 hours per day. The Endocrine Society (2008) also recommends breast-feeding for the first 6 months of life. As far as pharmacotherapy and bariatric surgery, much like the AAP (2007), The Endocrine Society

(2008) found weaker evidence to support the routine use of pharmacotherapy and bariatric surgery. Nonetheless, The Endocrine Society (2008) recommends that bariatric surgery only be considered in developmentally mature, persistently obese, and mentally stable patients.

**Critique.** The Scope and Purpose of The Endocrine Society's (2008) guideline is evident. The target population along with the specific interventions, screening assessments, and major outcomes considered are clearly listed. The Stakeholder Involvement category of the AGREE Instrument (2009) is satisfied through the listed intended users in the opening paragraphs of the guideline. However, this guideline does not list the extent to which the guideline was developed under the supervision of multiple/relevant specialty groups. As for the Rigor of Development, The Endocrine Society (2008) was evidently extremely thorough: two systematic reviews were completed to support the guideline's development. Approximately 1162 abstracts were initially considered. After review, 29 randomized controlled trials were analyzed for the prevention portion of the guideline, while 61 trials were included for the treatment review component.

In the fourth domain—Clarity of Presentation—The Endocrine Society (2008), like the AAP (2007) and USPSTF (2010), separates their recommendations into appropriate categories; nonetheless, the simplicity of the AAP's (2007) bulleted lists and appendices is superior to the paragraph recommendations found herein. As for Applicability, The Endocrine Society (2008), while providing patient resources, does not offer provider resources nor does it discuss the barriers to implementation like the two previous guidelines. Lastly, the Editorial Independence of this guideline is difficult to assess as the funding for the development of this guideline is reportedly from The Endocrine Society. All of the members of the committee reportedly declared no financial interest or conflict in the creation of this guideline.

## Michigan Quality Improvement Consortium

**Summary of the Guideline.** The Michigan Quality Improvement Consortium (MQIC) is a group of multidisciplinary providers, researchers, and health plan administrators that reportedly strive to establish and implement sets of clinical practice guidelines and performance measures to increase successful patient outcomes and achieve consistency in care delivery. In 2012, the Michigan Quality Improvement Consortium published a guideline suggesting that children over the age of 2 with a BMI >85<sup>th</sup> % should have comprehensive history and physicals, lifestyle and behavioral modifications, and lipid panel screening. In addition to these practices, MQIC (2012) recommends providers utilize a multi-disciplinary approach in the treatment of children over the age of two presenting with a BMI between the 85<sup>th</sup> % and the 95<sup>th</sup> % and risk factors/complications. As far as laboratory work, the MQIC (2012) recommends that in addition to a lipid panel, children over the age of 10 should have liver function tests and a fasting glucose every 2 years. Lastly, the MQIC (2012) also recommends all children with a BMI >95<sup>th</sup> % should have BUN and creatinine evaluations every 2 years.

**Critique.** The Scope and Purpose of the MQIC's (2012) guideline is clearly delineated into categories and designated populations of patients (patients with BMI>85<sup>th</sup> % with or without complications). Also, much like the three preceding guidelines, the intended practitioners and specialties are easily identifiable. Two primary guideline objectives are also clearly listed. Secondly, Stakeholder Involvement is neither evident nor clearly listed. The Rigor of Development of this guideline entailed searching electronic databases for clinical practice guidelines in the areas of physical activity, preschool physical activity, and recommendations for the treatment of obese children, amount of pediatric exercise, and quality of pediatric nutrition. The MQIC (2012) report analysis of this evidence to be through a committee review. In

comparison to the extensiveness of the Endocrine Society (2008) analysis, the MQIC's Rigor of Development is insufficient.

Clarity of Presentation is achieved through the clearly outlined intended patient populations and corresponding committee recommendations. As for Applicability, while the MQIC (2012) guideline does have a plan for practice implementation, neither provider nor patient resources were created. Further, no strategies to overcome expected barriers to implementation were suggested. Lastly, as for the Editorial Independence of the MQIC's (2012) guideline, the guideline states that standard disclosure is requested from all participating individuals, including disclosure of commercial relationships and lists the Michigan Quality Improvement Consortium as the sole source of funding in the creation of this guideline.

Through the use of the AGREE Instrument (2009) in the preceding sections, a multifactorial analysis of the four existing clinical practice guidelines for the screening, prevention and treatment of overweight and obese children revealed that, although fairly similar in quality, recommendations from the guidelines differ. This can lead to provider confusion and stratification in the delivery of care for these children. Nonetheless, what is apparent and reassuring for providers is that the experts do agree on the severity of the problem and the necessity to diligently screen children and diagnose them appropriately. Once diagnosed, all the experts recommend conservative approaches from increased physical activity, healthy diets, to counseling. Additionally, all of the clinical practice guidelines emphasize the importance of a family approach in the care of an overweight child. It is with these consistent themes and foundations in mind that the project manager created the "Eat Well, Live Actively" program.

## **Literature Review**

A comprehensive review of the interventions and trials that have previously demonstrated effectiveness and those that have not ensures collective progression in the body of knowledge. Coupled with the current evidence-based guidelines discussed previously, this review enabled the “Eat Well, Live Actively” program coordinator to utilize the most appropriate interventions to serve as the constructs of the program. Many research articles have been published in the last thirty years attempting to understand, treat, and prevent childhood obesity in the United States. This literature review, utilizing John Hopkins University’s Appraisal Tool (2013), focused on primary care interventions in the United States and their overall effectiveness (see Appendix E for summary).

## **Methods**

To complete this review of the literature on childhood obesity and primary care interventions, the research databases of CINAHL and PubMed were searched along with a manual reference list check. The preliminary search utilized the following keywords:

- Childhood Obesity
- Interventions
- Primary Care

Utilizing these keywords, 210 articles were identified as possible articles for analysis.

**Inclusion Criteria.** Of the 210 articles identified, the following criteria was used to narrow the range of articles utilized for analysis:

- Published in the 6 years since the development of the AAP’s guideline in 2007
- Population: Kindergarten to 6<sup>th</sup> grade
- Country: United States



- Interventions: family-focused programs, altered lifestyle modifications, provider targeted actions, and prevention methods

From the 210 articles, eight studies/meta-analyses met the inclusion criteria for analysis. This review summarizes some of the key interventions previously studied by the eight various articles selected.

### **Family Focused Interventions**

While all four guidelines discussed the importance of either directly targeting the parents in primary care interventions, or just simply involving them in the process, only one study focused on parental involvement. This was completed in a randomized controlled trial (RCT) by Golley et al. (2007). In this RCT, the researchers attempted to evaluate the effectiveness of a parenting skills training as a means to provide age appropriate behavioral modifications in overweight children. Patients were included if they were identified as overweight, in Tanner Stage 1, and caregivers were willing and able to attend parenting classes in English. Both groups of parents received four weekly 2-hour instructional sessions, followed by seven follow-up telephone sessions. In addition to these classes, the intervention group also participated in seven intensive lifestyle support group sessions. The effectiveness of the trial was measured through metabolic health outcomes and anthropometric data. Golley et al. (2007) found that both groups had significant decreases in BMI z-scores over the course of the 12 months of the program. Although there was no statistical significance between the two groups, boys in the either group statistically responded better than girls. The researchers concluded that while no statistical difference between the groups existed, interventions targeting caregivers proved to be an effective means to potentially decrease children's BMIs.

## **Lifestyle Modification Interventions**

All of the guidelines reviewed in the creation of “Eat Well, Live Actively” recommended lifestyle modifications. Three articles examining the effectiveness of various lifestyle interventions satisfied the inclusion criteria: one randomized trial and two meta-analyses. Hare et al. (2012) published a randomized controlled trial of an interventional primary care program aimed at modifying various lifestyle behaviors: healthier food choices, reduced portion sizes, decreased sweetened beverages, and increased physical activity. Over the course of a year, the researchers found no statistical differences in lifestyle modifications between the intervention group and the standard primary care group. However, researchers reported a positive correlation between family involvement and healthy lifestyle modifications. Further, this study was found to be feasible for implementation in primary care or community-based settings. In addition, this study is designed to meet the USPSTF’s (2010) intervention and length recommendations.

The two meta-analyses that fit the inclusion criteria examined lifestyle interventions in children. Wifley et al. (2007) examined 14 different randomized controlled trials with the target outcome of weight reduction. Wifley et al. (2007) found significant weight reduction in the treatment groups of the 14 trials examined. In comparison, control group participants’ weights increased on average from 2.1% to 2.8% from baseline data. While the optimal length of interventions to ensure efficaciousness was not determined, based upon the analysis, researchers encouraged providers to offer lifestyle modification interventions to overweight patients.

Kitzmann et al. (2010) reported similar results: “...lifestyle interventions can be effective under a wide range of conditions not limited to highly controlled conditions” (p. 91). Kitzmann et al. (2010) analyzed over 66 treatment-control studies published in journals, theses, and dissertations. Their analysis revealed that treatment participants showed significantly better

weight management than control groups, even if the treatment program was relatively short. Moreover, parental involvement was found to be associated with significantly better participant outcomes (Kitzamann et al., 2010).

### **Provider-Target Interventions**

Vine et al. (2013) examined 96 articles observing the various roles primary care providers play in the treatment and management of childhood obesity and associated co-morbidities. The need for expanded health care provider roles in the diagnosis and treatment of childhood obesity is reflected in the clinical guidelines published by the AAP (2007) and the USPSTF (2010), along with a 2012 report by the Institute of Medicine calling for proactive health care providers. Accordingly, the provider's role should encompass weight management from screening (measuring routine anthropomorphic data), to diagnosing, and finally to treating. Vine et al. (2013) report that primary care providers often complete only recommended BMI screening while failing to offer appropriate interventions.

Concurrently, Hopkins, DeCristofaro, & Elliott (2011) report that while many interventional studies have documented success, primary care providers are not utilizing the published recommendations. Hopkins, DeCristofaro, and Elliott (2011) attribute this to numerous barriers and a lack of resources. Thus, in alliance with the AAP's (2007) treatment plan recommendations, Hopkins, DeCristofaro, and Elliott (2011), created a toolkit for provider use. Similarly, Vine et al. (2012) identified and recommended nine expanded roles for primary care providers to meet expert recommendations and the needs of patients: weight assessment and monitoring, healthy lifestyle promotion, patient treatment, clinician skill development, infrastructure development, community referrals, community health education, community

initiatives, and policy advocacy. These role expansions are reflected and supported in the toolkit Hopkins, DeCristofaro, and Elliott (2011) created.

Schwartz et al. (2007) examined whether pediatricians and dietitians could offer an effective motivational interviewing process to decrease BMIs in overweight children. Fifteen different pediatricians were recruited who identified 91 parents of overweight children from annual well child exams. Recruited providers and dietitians received training on motivational interviewing. The study participants (parents) were divided into three groups: control group, minimal intervention group (received only one motivational interviewing session from a provider), and intensive intervention group (received two sessions from both a provider and dietitian). While the decreases reported among the three groups' BMIs were not significant, the researchers also reported difficulty with retention. Nonetheless, Schwartz et al. (2007) recommended that while additional research is necessary, provider-sponsored motivational interviewing was recommended as a feasible option for the primary care setting in the treatment of childhood obesity.

### **Prevention Interventions**

Another area the clinical practice guidelines addressed was the importance of obesity prevention. Branscum & Sharma (2010) conducted a meta-analysis reviewing the preventative measures specifically targeting Hispanic children. After an extensive review of multiple search engines, Branscum & Sharma (2010) identified nine interventional studies for analysis. Interventions ranged from informational weekly classes to physical activities to parenting classes. Echoing the AAP's 2007 guideline recommendations, Branscum & Sharma (2010) found interventions to be more successful when a parental component was included, the

intervention had theoretical foundations, the intervention was delivered by dedicated staff, and the intervention was several months in duration.

## **Research Synthesis**

The evidence of this analysis confirms that childhood obesity is a complex disease and is influenced by numerous factors. Since these factors are so numerous and so complex, many of the studies examined here have varied outcomes. Further, although this problem has become a pressing issue in the primary care community, the lack of a current, clear consensus on the use and implementation of current best-practice guidelines remains. This analysis has illuminated a continued need for a more developed body of research. Additional research examining the primary care component of childhood obesity specifically is not only prudent, but also necessary.

Secondly, as discussed above, the complexities of the issue and the varied outcomes of the studies make the aggregation of studies difficult. Nonetheless, there were consistent themes among the studies and guidelines. Namely, the studies illustrate a strong correlation between parental involvement and extensive lifestyle modifications. Likewise, programs that were longer and more intensive showed higher success rates. Thus, the “Eat Well, Live Actively” program was created based upon these themes.

## **Conceptual Framework**

As recommended by the American Academy of Pediatrics (2007), the Chronic Care Model (Appendix 2) served as the conceptual framework for “Eat Well, Live Actively.” The Chronic Care Model (CCM) was developed in the mid-1990’s by the MaColl Center for Health Care Innovation and the Robert Wood Johnson Foundation (Improving Chronic Illness Care, 2013). CCM was created in attempt to renovate the methods by which chronically ill patients were cared for in the ambulatory care setting: “The aim of the CCM is to transform the daily care

for patients with chronic illness from acute and reactive to proactive, planned, and population-base” (Coleman, Austin, & Wagner, 2009, p. 75). To accomplish this, there are four main constructs of this model:

- Provider expertise in the treatment and management of chronic illness
- Educated and supported patients through self-management supported by community resources
- Team-based care delivery through integrated decision making with thoughtfully planned interactions
- Appropriate, supportive information technology use (Coleman, et al., 2009)

In collaboration with current clinical practice guidelines and the body of research, CCM serves as an appropriate conceptual framework for the management of childhood obesity. Childhood obesity is classified as a chronic illness not only due to the associated co-morbidities but also because of the influential complexities. Successful management of an obese child requires more than what a single practitioner can offer: managing childhood obesity is dependent upon patient buy-in, guardian proactivity, community support, and the multidisciplinary team expertise.

## **Application**

The application of this model is reflected in the creation, design, and implementation of the interventions, discussed in greater detail in the following section. The “Eat Well, Live Actively” program is rooted in the same constructs as CCM: empowerment through education of both parent and child with the support of the multidisciplinary healthcare team and social community at large. In light of this framework, the focal point of managing overweight

participants in “Eat Well, Live Actively” was not focused on treating co-morbidities but rather promoting a healthy future through healthy lifestyle modifications.

## **Setting**

### **Community**

“Eat Well, Live Actively” commenced in the Tri-City Health Clinic in Fremont, California. Fremont, located in Alameda county, is the forth-largest city in the San Francisco Bay Area with approximately 200,000 residents (Office of Economic Development, 2013). Over 50% of the population is of Asian or Middle Eastern decent (Office of Economic Development, 2013). Many of the residents are immigrants: over 30% report foreign birth (US Department of Commerce, 2013). Tri-City Health Centers serve patients from within the city limits of Fremont and all over the county. The City of Fremont (2013) reports that the average household income is around \$90,000 per year while the average in Alameda County is around \$70,000 (US Census, 2013). Alameda County reports that 12% of county residents live below the poverty line (US Department of Commerce, 2013).

**Tri-City Health Center.** Tri-City Health Center is a non-for-profit community health center that attempts to provide holistic healthcare for Alameda County residents of all ages and races. Tri-City specifically tries to be an affordable option for those with limited financial resources. Tri-City reports nearly 98% of the patient population lives below 200% of the federal poverty line (Tri-City Health Center, 2011). Additionally, prior to healthcare reform, more than half of patients were without private or publically funded health coverage (Tri-City Health Center, 2012).

Tri-City Health Clinic is a network of nine different clinics. In 2012, the clinics reported serving approximate 23,000 patients with over 88,000 patient visits. Tri-City reports over 20

providers offering services from medical (Adult Primary Care, Pediatric Care, Women's Health, HIV Care, Behavior Health, Dental), educational, to social services (Tri-City Health Center, 2012). Tri-City previously had a grant-funded childhood obesity program but due to funding shortages, the program was discontinued.

**Benefits.** The remaining constructs of Tri-City's previous obesity program were very beneficial, as many of the members from the first program were still employed at Tri-City despite the loss of funding (for example, registered dietitians). Further, the four pediatricians on staff were familiar with the methodology of implementing a childhood obesity program and had verbally vested interest in its success. Additionally, Tri-City maintained connections with the local Young Men's Christian Association (YMCA). Because of this connection, initiation and implementation of the physical activity portion of the "Eat Well, Live Actively" program was swift with minimized buy-in barriers. Having a pre-established, expert multidisciplinary group also significantly decreased the financial burden of implementation of this program.

**Barriers.** Prior to implementation, the diversity of Tri-City was anticipated as potential a barrier: over 30% of Tri-City's patients reported being best served in a language other than English (Tri-City Health Center, 2012). Program interventions were limited to the language spoke by the project manager (English) and the members of the team (English and Spanish). Another anticipated barrier from this patient population was retention. This was perceived, but not actually documented, during the previous childhood obesity program at Tri-City. Schwartz, et al. (2007) reported such a problem in their study: less than 50% retention rate among parent participants. The multi-interventional aspects of this capstone were anticipated to contribute to poor retention as well.



**Target Population**

Although obesity rates have increased in the last thirty years among all races and socioeconomic backgrounds, minority children are still disproportionately obese. The CDC (2013) reports the highest rates of childhood obesity to be in Native Americans and Hispanic children. Further, one of every seven children from a low-income family is either obese or overweight (CDC, 2013). Specifically, the LA Times (2009) reports that 34% of Alameda children are obese. As Tri-City Health Clinic primarily served both minority (although primarily minorities from Asian decent, Hispanic patients made up 38% of the patient population at TCHC in 2012) and low-income patients, the target population for “Eat Well, Live Actively” was representative of patients most affected by childhood obesity.

The age of the target population was ages 11 to 14. This age was selected due to developmental stage according to Erikson: Identity versus Role Confusion. The child in this stage is attempting to establish themselves as an individual with a sense of purpose and identity. The stigma associated with obesity has been identified as particularly sensitive for this population of patients (Puhl & Latner, 2007). Puhl & Latner (2007) report that overweight pre-teenagers are victims of bias and stereotyping by their peers. This is particularly concerning in this population during this pivotal developmental process of establishing independence/identity with reciprocating peer acceptance. Children in this developmental stage are cognitively aware of their weight, and due to the tasks of their development stage, are prime candidates for proactive interventions.

Further, the gross motor skills of this population enhanced the level of independence achieved in the interventional phase of this capstone. This population did not need close supervision, which aided in allocating necessary resources for specific interventions in the “Eat

Well, Live Actively” program. Lastly, due to their cognitive development and gross motor skill, this population of patients was able independently alter their activities of daily living regardless of guardian involvement (i.e. playing outside after school instead of watching TV).

### **Stakeholders**

This capstone was dependent upon key stakeholders’ active involvement in the project. Stakeholders were those that had a perceived benefit in partaking in this intervention. Key stakeholders for implementation of the “Eat Well, Live Actively” program firstly included the participants. Secondly, the parents of these participants are stakeholders whose perceived benefit and involvement was sustained through family-focused interventions. The YMCA staff members were stakeholders as they were vital members of the team, creating appropriate and effective fitness sessions for participants and their parents. Tri-City employees (pediatricians, dieticians) were also stakeholders in that they were essential components of this capstone’s completion. Their active contribution of expertise and participation was a necessity. Initially, the project manager provided one-on-one presentations to ensure the Tri-City stakeholders’ felt appreciated. These meetings also served as an opportunity for stakeholders to voice concerns or apprehension. To ensure sustained participation and perceived benefits, the project manager offered regular forms of positive reinforcement (letters of appreciation, weekly e-mail updates, result data) to ensure these stakeholders were abreast of program developments and also had the opportunity to express their concerns and suggestions.

## Design & Methods

### Design

The planning phase of “Eat Well, Live Actively” consisted of deciphering and creating the most evidence-based constructs for this Capstone through a current clinical practice guideline review and literature review. The project manager served as the “Eat Well, Live Actively” coordinator for Tri-City Health Center. This childhood obesity treatment program was designed based upon the AAP’s (2007) “Weight Management Protocols.” The program had four main areas of focus: increased primary care visits, routine visits with registered dietitians, increased physical activeness, and frequent communication (participants to treatment team; within the treatment team). Participants in the “Eat Well, Live Actively” program had two visits with their PCP, two visits with a RD, bi-weekly YMCA classes, and weekly phone calls with the program coordinator. The sole intention of these interactions was to foster increased parental involvement and increased healthy lifestyle modifications. It was hypothesized that improvement in these two areas would result in sustained or decreased Body Mass Index’s (BMI) and quantifiable increases in self-reported lifestyle modifications.

**Recruitment.** Utilizing Tri-City’s EHR (Nextgen©), a report was generated of all patients served in the Tri-City Clinic that meet the inclusion criteria for the program:

- Age: 11-14
- BMI:  $\geq 95^{\text{th}}$ %
- Primary Language: English or Spanish

The potential candidates that fit parameters of the inclusion criteria were then contacted by the project manager via phone. Candidates and their parents were assessed for interest in participation in “Eat Well, Live Actively” (see Appendix F for sample script). Once candidates

and parents expressed interest and willingness to participate, they were scheduled to attend a meeting with the project manager. The YMCA facilitated a space for the project manager to meet with the participant and their guardian(s). At this meeting the project manager discussed the program in greater depth and gave families the opportunity to ask questions. Assistance was offered to facilitate completion of the necessary paperwork to participate in the YMCA's activities. The project manager also obtained parental consent (Appendix G) for program participation. After this initial meeting with the project manager, the participant and the parents were given the schedule of YMCA classes.

Once consent was obtained, the participant was scheduled for an initial assessment and evaluation with their primary care provider. An initial visit with the registered dietitian was also arranged. These appointments were made through the use of Tri-City's EHR. At the conclusion of the participants' initial visits with the PCP and RD, the participant and parent were to be scheduled for the subsequent follow-up visits.

**Sample Size.** Without reservation, increased sample size increase outcome significance; however, the number of participants utilized in this capstone was dependent upon the number of patients the members of the team believed they could support along with their normal patient load: approximately 20 patients. Parental consent (Appendix G) and verbal commitment/awareness of the program was also a determinant of sample size. As space was limited and parent/patient participation was necessary for success, only those who expressed interest were enrolled. The nature of this capstone only allowed for a convenience sample, randomization is not possible in the intervention group.

**Preparation.** Prior to the initial evaluation by the PCP, the project manager met with the Pediatrics Department staff. During the stakeholder meeting, the project manager handed out a

reference guide for these upcoming appointments (Appendix H). Similarly to the tool kit created by Hopkins, DeCristofaro, and Elliott (2011), the project manager provided the TCHC pediatricians with the suggested weight management protocol based upon the AAP's 2007 recommendations. Additionally, as Motivational Interviewing techniques are encouraged by the AAP (2007) and have been demonstrated as effective in the literature review (Schwartz, et al., 2007), the project manager also briefly discussed and encouraged the use of this technique (Appendix I). Lastly, this meeting also served as an opportunity to explain the program at large (the objectives, the conceptual framework) and the participation expectations of all the stakeholders

**Interventions.** As mentioned previously, this capstone facilitated four different interactions with participants through the course of the program: pediatrician appointments, dietician appointments, bi-weekly classes at the YMCA, and weekly phone calls with the program coordinator. These interactions were created based upon the evidence reflected in the literature. The intended end-product from these interactions with participants was focused specifically on improving two key areas: increased parental involvement and increased healthy lifestyle modifications.

**Parental Involvement.** The literature and the current practice guidelines support a family-based approach to treating childhood obesity (Golley et al., 2007; Appendix E). The increased parental involvement objective was reflected in the creation of interventions (Appendix J) modeled after the Chronic Care Model (CCM) and the literature review West, et al. (2010) recommend the use of the Australian-based Lifestyle Triple P approach based on the Positive Parenting Program©. The Positive Parenting Program© is a parenting model built upon social, behavioral, and developmental theory: "Triple P is based on child development theory and social

learning principles and aims to promote parental competence to manage their child's behavior" (Golley et al., 2007, p.519). The theorist behind the program has five key areas believed to promote positive, healthy, holistic children: create a safe, interesting environment; have a positive learning environment, use assertive discipline, have realistic expectations, take care of yourself as a parent (Triple P International Pty Ltd., 2013). While consulting a clinical psychologist extended beyond the scope of this capstone, collaboration with team members (dietitians, providers, physical fitness trainers) was vital in the development of the family-focused interventions. Each phase—the primary care, the dietitians, and the YMCA—of the capstone vacillated around the core concept of the Triple P method of parent-child empowerment. Family-focused interventions in each area utilized in this capstone are delineated in Appendix H.

***Healthy Lifestyle Modification.*** The role of the project manager in promoting lifestyle modification was achieved through implementing "The Teach-Back Method" (Appendix K). The NC Health Literacy (2012) Foundation reports that 40-80% of new medical information patients receive is immediately forgotten. Further, nearly half of the information the patient does retain is incorrectly recalled (NC Health Literacy, 2012). "The Teach Back Method" served as a way to confirm that the provider has explained what the patient needs to know in manner they can understand. This method is a cyclic process by which the clinician offers new information, assesses the patients understanding of the new content, and clarifies areas of confusion or misinformation.

Communication between the project manager and the team members was vital for effective use of the "Teach Back Method": the team was expected to submit a summary every week to the project manager of the participants counseled and the content covered (Appendix L).

Utilizing the concepts of Motivational Interviewing (Schwartz et al., 2007; AAP, 2007) and “The Teach-Back Method” the project manager contacted the participants and evaluated their understanding of the content delivered by the team on a weekly basis. The project manager kept a record of the weekly content covered and questions that arose for later use. Although the content changed on a week to week basis and was modified to meet the individual barriers and needs of each family, the methodology of the weekly calls was the same (Appendix M): the parent, followed by the participant, was asked about their recent visit, what content was covered, and what was their understanding of the material; what if any lifestyle changes were made, how these changes have affected the family; and what their goals for the coming week were. As demonstrated in Appendix K, these questions assessed the baseline knowledge and comprehension of the new content provided and offered an opportunity for the project manager to clarify misinformation and aid with intrinsic motivation. In the weekly correspondence with the team, the program coordinate notified the team of any consistent themes/areas of confusion.

### **Method of Evaluation**

The intended outcome of this capstone was two-fold: increased healthy lifestyle modifications and decreased BMI through parental involvement and concise, accurate teaching methods. As this was a capstone attempting to improve the overall health and quality of life of the target population, four outcome variables were utilized to measure the overall effectiveness of this program: reaction, learning, behavior, and results (Kirkpatrick, 2001).

**Reaction.** This outcome variable is simply the measurement of the level of satisfaction of the participants. There is no baseline data that needed to be collected prior to initiation. This data is used entirely to measure if satisfaction with program participation was achieved. This was valuable data as ownership and patient buy-in are known to be a vital component in health

preservation and chronic illness management: if the patient does not find the program enjoyable they are not likely to continue using the program or its concepts (Yukl, 2011). This data was collected with post-intervention questionnaire for the participants and parents (Appendix N, O). The target outcome was a 100% of patients and parents would report satisfaction of a '4' or higher in all categories where appropriate.

**Learning & Behavior.** This outcome variable measured the level of knowledge the patients obtained from the interventions and what change, if any, they made to their daily health maintenance behaviors. This data was measured with a pre- and post-intervention questionnaire. An adaptation from the American Academy of Pediatrics' *Bright Future: Nutrition* (2011) questionnaire was utilized to measure participants' lifestyle habits (food choices, eating habits, physical activity, TV). This questionnaire was administered by the dietitians to participants pre- and post-program participation. The net-target improvement was 20% from pre-intervention reporting.

**Results.** This last outcome indicator recommended by Kirkpatrick (2001) was comprised of quantitative data, collected before and after the program had been implemented. The anthropometric data collected included the child's age, weight, height, and blood pressure. As obesity is identified by BMIs, this was also calculated. This data was recorded in the EHR system currently in use at Tri-City. The program coordinator retrieved this data for analysis and input it into Microsoft Excel ©. Due to the time allotment for this capstone, target outcomes for these indicators were set at maintaining or decreasing participant BMI.

### **Data Collection & Analysis**

Data collection for the first outcome variable was obtained on paper (satisfaction questionnaire) by the program coordinator after a group activity. The questionnaires (Appendix



N, O) were generated and dispensed to participants and parents in attendance of the group activity. The project manager manually collected returned surveys and entered the data from these outcome variables into Microsoft Excel© spreadsheet. The Learning and Behavior outcomes were measured with pre- and post- nutrition questionnaires administered by the Registered Dieticians (RD). An Excel© spreadsheet with the *Bright Future: Nutrition* (2011) questions was created and utilized for each participant at the initial visit with the RD and at the final visit. These spreadsheets were then submitted electronically to the project manager.

The fourth outcome variable (Results: anthropometric data) was collected by the dieticians and the pediatricians' Medical Assistants. Utilizing EHR, the project manager generated a report of the anthropomorphic data for comparison (pre- and post-intervention). Changes in BMI, height, weight, and blood pressure was calculated. Basic calculations were completed in Excel © to determine the net BMI change for each participant. These findings were distributed to the team for analysis and use in the replication of this capstone in the future.

### **Implementation**

The projected timeline (Appendix P) for this capstone spanned five months. An extensive cost-benefit analysis for this capstone was not needed. As discussed in the previous section, Tri-City's resources made implementing this capstone extremely feasible fiscally. Time was the most necessary resource for this capstone. The project manager's time was donated. The YMCA donated the time and expertise of their athletic trainers along with the use of their facilities. The remaining members of the multidisciplinary team are currently Tri-City employees. Their participation in the "Eat Well, Live Actively" program was endorsed and expected by the Tri-City management. Regardless, Appendix Q offers a cost-benefit analysis estimating the value of these donated services.

The cost of obesity is nearly \$200 billion annually (Cawley & Meyerhoefer, 2012). The fiscal benefit of preventing obesity in the next generation of adults is immeasurable. Moreover, by not only preventing illness but promoting the quality of patients' lives, this capstone offers benefits that can neither be quantified nor fiscally deemed (Roche, 2012). Thus, not only was the implementation of this program cost effective, but also effective in preserving the quality of life of the participants.

### **Protection of Human Subjects**

To ensure adequate measures were taken to protect the identity of capstone participants, the project manager and team members all utilized Tri-City's secure network and e-mail for correspondence relating to the program. All members had password-protected access to the network and e-mail browser. Additionally, participants were assigned a number at random that was used for identification purposes during data collection. No foreseen risk to the study participants was anticipated. Because this was a quality improvement capstone and the confidentiality of all participants is protected, approval from the International Review Board was not necessary.

### **Results**

Four outcome variables were determined in accordance with Kilpatrick's (2001) recommendations: reaction, learning, behavior, and results. Of the initial 20 participants recruited for this capstone, 12 participants and guardians completed the necessary paperwork to utilize the YMC's facilities and participate in this capstone (Appendix G). Seven participants and eight guardians completed the satisfaction surveys and six participants completed follow-up appointments with their pediatrician. Retention throughout this capstone is discussed in greater detail in the following section.

**Reaction**

The “Reaction” outcome variable is based on participant and guardian satisfaction. This variable is based upon the concept of patient buy-in and illness ownership. As reflected in the Chronic Care Model, chronic illness such as childhood obesity require ownership of the disease and illnesses. Further, if a participant/parent does not ‘like’ the intervention, the intervention is less likely to be sustained (Yulk, 2001). The target outcome for this variable was that a 100% of participants and guardians would report a “4” or higher in every category on their exit surveys (Appendix N, O). The target outcome was achieved with the participants (Appendix R). In the guardian survey (Appendix S), 88% of guardians reported “4” or higher in every category. One hundred percent of guardians reported a “3” or higher in every category.

**Learning and Behavior**

The “Learning and Behavior” outcome variables were measured through pre- and post-intervention healthy lifestyle surveys administered by the Registered Dietitians and the participants’ appointments. Each participants’ self-reported behaviors were recorded in their own Excel© spreadsheet. After completion, the program coordinator compiled the results from all participants to analyze the net change (Appendix T). The target outcome was a 20% improvement from pre-intervention answers. A 20% improvement would require a reported improvement in 3.4 categories. The results (Appendix T) reveal that at baseline all of the participants reported optimal answers in five categories (meals skipped, dairy consumed, fast food consumption). An overall net improvement was reported in two categories: soda consumption and extras (i.e ‘junk food’) consumption. It is worth noting that only four of the participants completed pre- and post- intervention surveys with the Registered Dietician.

## **Results**

The “Results” outcome variable was measured through the collection of pre- and post-intervention anthropomorphic data. An unchanged BMI was the target outcome for this variable due to the relatively short period of this capstone. Anthropomorphic data was collected at the pediatrician and Dietician appointments. Change in weight and BMI were measured (Appendix U). Of the six participants that attended their second appointment with the pediatrician, five maintained or improved their BMI percentage. All of the improvements were less than a percentage. These six participants represent the most active participants in the program: they frequently attended classes at the YMCA, kept their appointments at Tri-City, and communicated with the program coordinator most routinely.

## **Limitations**

The limitations of this Capstone are numerous and complex. Recruiting and maintaining the target sample size proved to be very difficult. At its conclusion with six participants satisfying all of the interaction components of the program, thus, giving this capstone an overall retention rate of 30%. The project manager was unable to control for if participants missed appointments or classes at the YMCA. Regardless, this small sample size contributed limited implications of the outcome data generated. Initially, the project manager intended on recruiting patients that spoke both English and Spanish. However, the project manager only spoke English fluently and the remaining team members that spoke Spanish were unable to assist in the recruitment phase. The sample size inevitably resulted in a primarily English-speaking cohort. This capstone was also limited by the design of the project: setting up and maintaining appointments in a timely manner are at the mercy of provider’s availability and schedule flexibility. Unavoidably, this created variance in the collection of pre- and post-intervention data. Additionally, the

complexities of the design—four different interventions—and length of the capstone (four months) contributed to the lack of retention.

While the project manager e-mailed the staff weekly, correspondence from team members to the project manager regarding content covered in their interactions with the participants was also neither exercised nor maintained throughout the course of the capstone.

Weekly phone calls initially intended for employing the “Teach Back Method” (Appendix K, M) also proved to be difficult to complete. Many participants did not answer their phone. The project manager tried to accommodate for this by also sending out emails to participants and their parents; however, this did not provide the interaction necessary for the “Teach Back Method.” If a parent or participant was actually reached, the conversation often led to discussing upcoming appointments and the struggles of everyday life. Many such struggles included discussing the difficulties associated with childcare, transportation, and a steady income.

Many guardians were not the participants’ parents. For example, one of the guardians was a disabled, elderly grandmother who reported extreme difficulty driving her grandchildren to the YMCA twice a week as she was normally bed-ridden. Another guardian had recently assumed care of one of the participants after his mother was imprisoned for illegal drug possession and was having behavioral trouble getting the participant to go to school let alone the YMCA. Still another guardian reported suddenly being left a single mother with three small children and a job bagging groceries after her husband recently left without notice.

In reflecting on Maslow’s “Hierarchy of Needs,” it is not surprising that this population of participants had much more immediate needs than making healthy lifestyle modifications and working out. The program coordinator had not anticipated this finding, yet feels the weekly

phone calls offered valuable insight into one of the key perpetrators of childhood obesity. Additionally, the program coordinator was permitted a brief perspective on the intricacies of poverty.

Clearly one of the greatest contributors to data variance and the limited success of this capstone was founded in the complexities associated with poverty. The sample size was representative of the impoverished community at large (please reference the “Setting” section). Poverty influences nearly every aspect of patients’ lives—from the food one purchases, to the jobs one takes, to the amount of time dedicated to physical fitness and preparing healthy foods. A lack of transportation often limited potential participants from enrollment in the program initially. Additionally, many participants were from single-parent households where attending an early evening class at the YMCA was not feasible. Controlling for poverty and minimizing its influence in this program was not possible. It will be vitally important in the replication of this capstone and additional childhood obesity trials that the influence of poverty be adequately prepared and accommodated for.

## **Discussion**

The childhood obesity pandemic has proved through the last three decades to be a difficult disease to not only treat but also prevent. The clinical practice guidelines available for provider reference and use serve as a foundation for current practice. The “Eat Well, Live Actively” program was a solidly supported by sound theory and current evidence-based practice; targets a high-risk, high-need population; and is fiscally feasible. While the results from this capstone were not statistically significant and controlling for the data variance was difficult, this program illuminated a need for further research in childhood obesity in the Primary Care setting. Further research needs to embrace a more simplistic approach (i.e. one intervention) to minimize

participant drop-out and data variance. Additionally, “Eat Well, Live Actively” has illustrated the difficulties associated with childhood obesity and poverty. It will be necessary for future research to focus on methods to minimizing the influence of poverty. Research exploring such methods is limited. However, efforts to minimize “food deserts” and improve overall access to healthy, yet affordable, foods is supported by recent research and initiatives sponsored by the *Let’s Move* campaign and the United States Department of Agriculture (2010). Kaufman & Karpati (2007), published observations of food practices in impoverished families in Brooklyn in 2007. As many families living in poverty are dependant upon federally funded programs such as Supplementary Security Income and food stamps, Kaufman and Karpati (2007) recommend exploring methods of improving these programs to help facilitate healthy choices.

Regardless, should a program similar to “Eat Well, Live Actively” be replicated, a bi-lingual program coordinator and a larger sample size would be necessary. Additionally, a more formal, uniform approach to YMCA classes and scheduling participants’ appointments would be appropriate. An extensive program like “Eat Well, Live Actively” requires time, scheduling, and money allotment on behalf of the setting and team. This program, unfortunately, does not fit easily into the regular routines of a busy clinic like Tri-City Health Center. Nonetheless, “Eat Well, Live Actively” successfully illuminates a debilitating need in communities such as Fremont. “Eat Well, Live Actively,” while not statistically significant, was successful in raising awareness in the community and was the first necessary step towards a solution.

## References

- AGREE Collaboration. (2009). *Appraisal of Guidelines for Research & Evaluation II*. Retrieved from [www.agreetrust.org](http://www.agreetrust.org)
- August, G. P., et al (2008). "Prevention and treatment of pediatric obesity: A Endocrine Society clinical practice guideline based on expert opinion." *Journal of Clinical Endocrinology*, 92(12): 4576-4599.
- Barlow, S. E. (2007). "Expert committee recommendations regarding the prevention, assessment and treatment of child and adolescent overweight and obesity: Summary report" *Pediatrics*, 120(S4):S164-S192.
- Branscum, P. & Sharma, M. (2011). "A systematic analysis of childhood obesity prevention interventions targeting Hispanic children: Lessons learned from the previous decade." *Obesity Reviews*, 12: 151-158.
- Cawley, J., & Meyerhoefer, C. (2012). "The medical care costs of obesity: An instrumental variables approach." *Journal of Health Economics*, 3(1): 219-230.
- CDC. (2012). "Adolescent and school health." Retrieved from [www.cdc.gov](http://www.cdc.gov)
- CDC. (2012). "Principles of epidemiology in public health practice, 3<sup>rd</sup> ed." Retrieved from [www.cdc.gov](http://www.cdc.gov)
- CDC. (2013) "VitalSigns: Progress in childhood obesity." Retrieved from [www.cdc.gov](http://www.cdc.gov)
- Coleman, K., Austin, B., Branch, C., & Wagner, E. (2009). "Evidence on The Chronic Care Model in the new millennium." *Health Affairs*, 28(1): 75-85.
- Daley, K. & Weston, M. (2013). "Framework for how to read and critique a research study" sponsored by the American Nurses Association, retrieved from [www.nursingworld.org](http://www.nursingworld.org)



- Golley, R. K. , et al. (2007). "Twelve-month effectiveness of a parent-led, family-focused weight-management program for prepubertal children: A randomized, controlled trail." *Pediatrics*, 119(3): 517-525.
- Hare, M. et al. (2012). "Methods and baseline characteristics of randomized trial treating early childhood obesity: The Positive Lifestyles for Active Youngsters (Team PLAY) trial." *Contemporary Clinical Trials*, 33(3): 534-549.
- Holt, K., et al. (2011). *Bright Futures: Nutrition*, 3<sup>rd</sup> ed. Retrieved from [http://brightfutures.aap.org/pdfs/BFNutrition3rdEdition\\_tools.pdf](http://brightfutures.aap.org/pdfs/BFNutrition3rdEdition_tools.pdf)
- Hopkins, K. F., DeCristofaro, C., & Elliott, L. (2011). "How can primary care providers manage pediatric obesity in the real world?" *Journal of the American Academy of Nurse Practitioners*, 23: 278-288.
- Improving Chronic Illness Care. (2013). "The Chronic Care Model." Retrieved from [www.improvingchroniccare.org](http://www.improvingchroniccare.org)
- Indeed. (2014). "Salaries in the San Francisco Bay Area, CA" Retrieved from [www.indeed.com](http://www.indeed.com)
- John Hopkins University. (2013). "JHNEBP Research Evidence Appraisal" sponsored by John Hopkins University, Retrieved from [www.nursingworld.org](http://www.nursingworld.org)
- Kaufman, L. & Karpati, A. (2007). "Understanding sociocultural roots of childhood obesity: Food practices among Latino families of Bushwick, Brooklyn." *Social Science and Medicine*, 64 (11), 2177-2188.
- Kitzmann, K. M., et al. (2010). "Lifestyle interventions for youth who are overweight: A meta-analytic review." *Journal of Health Psychology*, 29(1): 91-101.
- Kirkpatrick, D. L. (2001). *Managing Change Effectively*. Boston: Butterworth-Heinemann.
- Michigan Quality Improvement Consortium. (2012). "Treatment of Childhood Overweight

- and Obesity.” *Michigan Quality Improvement Consortium*, Jun: 1p.
- NC Program on Health Literacy. (2013). “Teach-Back Method.” Retrieved from [www.nchealthliteracy.org](http://www.nchealthliteracy.org)
- Office of Economic Development. (2013). “Fremont community profile: 2013.” City of Fremont. Retrieved from [www.fremont.gov](http://www.fremont.gov)
- Ogden, C., Carroll, M. D., Curtin, L. R., Lamb, M. M., & Flegal, K. M. (2010). About Childhood Obesity. *JAMA*, 303(3), 242-249.
- Olshansky, S. J., et. Al. (2005). “A potential decline in life expectancy in the United States in the 21<sup>st</sup> century.” *New England Journal of Medicine*, 325(11): 1138-1145.
- Pesce, A. (2011). “Childhood Obesity Rates.” Los Angeles Times. Retrieved from [www.graphics.latimes.com](http://www.graphics.latimes.com)
- Puhl, R. M., & Latner, J. D. (2007). “Stigma, obesity and the health of the nation’s children.” *Psychological Bulletin*, 133(4): 557-580.
- Roche, J. (2012) Nursing 701. Nursing Health Care Quality. Lecture notes. [PDF Documents]. Retrieved from <https://learning.umassonline.net>
- Schwartz, R. P., et al. (2007). “Office-based motivational interviewing to prevent childhood obesity.” *Archives of Pediatric and Adolescent Medicine*, 161: 495-501.
- Tri-City Health Center. (2012). “About us: Demographics” Tri-City Health Center. Retrieved from [www.tri-cityhealth.org](http://www.tri-cityhealth.org)
- Triple P International Pty. Ltd. (2013). “Parents stay positive!” Retrieved from [www.triplep-parenting.net](http://www.triplep-parenting.net)
- United States Department of Agriculture. (2010). “Creating access to healthy, affordable food” USDA. Retrieved from [www.apps.ams.usda.gov](http://www.apps.ams.usda.gov)

US Department of Commerce. (2013). "State and County QuickFacts." United States Census Bureau. Retrieved from [www.quickfacts.census.gov](http://www.quickfacts.census.gov)

US Preventive Services Task Force. (2010). "Screening for obesity in children and adolescents: US Preventive Services Task Force recommendation statement." *Pediatrics*, 125(2): 361-367.

Vine, M, et al. (2013). "Expanding the role of primary care in the prevention and treatment of childhood obesity: A review of clinic and community-based recommendations and interventions" *Journal of Obesity*, 2013: 1-17.

West, et al. (2010). Randomised clinical trial of family-based lifestyle intervention for childhood obesity involving parents as the exclusive agents of change." *Behaviour Research and Therapy*, 48: 1170-1179.

Wifley, D. E., et al (2007). "Lifestyle interventions in the treatment of childhood overweight: A meta-analytic review of randomized controlled trials." *Journal of Health Psychology*, 26(5): 521-532.

Xu, P. (2012). "Using teach –back for patient education and self-management." *American Nurse Today*, 7(3). Retrieved from [www.americannursetoday.com](http://www.americannursetoday.com)

Yukl, G. (2011). *Leadership in Organizations*: 7<sup>th</sup> edition. Pearson: India.

## Appendix A

### AGREE Instrument: Guideline Scores

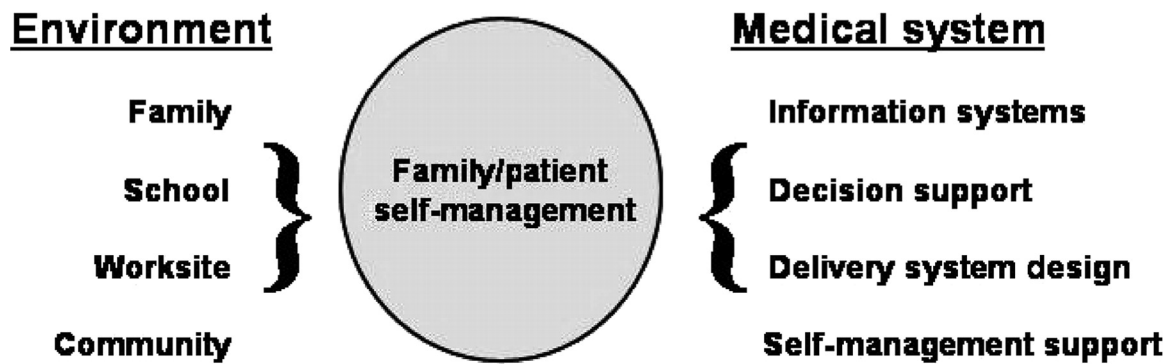
Table 1. AGREE Scores

Guideline	AGREE Score	Recommended for Use?
American Academy of Pediatrics (2007)	6	Yes; this is the most endorsed and followed guideline but it needed to be updated
US Preventative Services Task Force (2010)	6	Yes
Endocrine Society (2008)	5	Yes; this guideline is founded on a very extensive literature review but it needed to be updated
Michigan Quality Improvement Consortium. (2012)	4	No, the stakeholders utilized in the development of this guideline are not necessarily experts and conflicts of interest are suspected

## Appendix B

Chronic Care Model (AAP, 2007)

# Chronic Care Model



**Appendix C**

## AAP (2007) Laboratory Recommendation

<b>BMI</b>	<b>Test</b>
>85 <sup>th</sup> -94%, no risk factors	Fasting lipid panel
>85-94 <sup>th</sup> %, +risk factors (family hx, HTN, hyperlipidemia, tobacco use)	Fasting lipid panel, AST/ ALT, fasting glucose
>95 <sup>th</sup> %, regardless of risk factos	Fasting lipid levels, AST/ ALT, fasting glucose

## Appendix D

### AAP's (2007) Stages of Treatment

**Table II** Summary of the expert recommendations and the three-world view at the recommended stages of obesity treatment

	<i>Clinical world</i>	<i>Operational world</i>	<i>Financial world</i>
Stage 1: prevention plus	Family centred Referrals for outside care if necessary (e.g. nutrition)	Primary provider (e.g. physician) Administrative support in scheduling for one primary provider's patients Information for referrals offsite	Reimbursable medical procedures as done by a physician
Stage 2: structured weight management	Family centred Multidisciplinary with added healthcare Professional with childhood obesity expertise (typically a nutritionist at this stage) Coordinated care for offsite referrals <sup>a</sup>	Provider (e.g. physician and nutritionist) Administrative support with scheduling and for additional providers Information sharing and releases <sup>b</sup>	Reimbursable medical procedures as done by a physician <sup>c</sup>
Stage 3: multidisciplinary intervention	Family centred Multidisciplinary with the addition of behavioural treatment Coordinated care of services either on or offsite <sup>d</sup>	Multiple provider Administrative support Information sharing and releases Shared nursing staff and medical facilities Shared treatment plans <sup>e</sup>	Reimbursable medical procedures as done by the physician <sup>f</sup>
Stage 4: tertiary care intervention	Family centred Multidisciplinary with behavioural treatment Coordinated care <sup>g</sup>	Providers Administrative support Information sharing and releases Shared nursing staff and medical facilities Treatment team meetings <sup>h</sup>	Reimbursement for higher level services Bundled services (grouping obesity prevention and treatment services into a single package) <sup>i</sup>

**Notes:** <sup>a</sup>No detail about collaboration with the added healthcare professional; <sup>b</sup>no detail about how to schedule or administrate support for the added healthcare professional; <sup>c</sup>no detail about how to reimburse for the added healthcare professional; <sup>d</sup>no detail on communication with or collaboration with the added healthcare professionals (e.g. shared treatment planning and goals); <sup>e</sup>no detail about how administrative support facilitates multiple providers (e.g. scheduling, nursing services, etc.); <sup>f</sup>no detail about how to reimburse for multiple providers in the same physical setting on the same day; <sup>g</sup>no detail about collaborative or integrated care treatment team facilitation (team meetings, patient flow, and shared treatment planning); <sup>h</sup>no detail about how administrative support facilitates multiple providers (e.g. scheduling, nursing services, etc.); <sup>i</sup>no detail about how to reimburse for multiple providers in the same physical setting on the same day

## Appendix E

### Literature Review

Table 2. Literature Review

CITATION	SAMPLE/ LOCATION	INTERVENTION	OUTCOME	STRENGTHS/ WEAKNESSES	EVIDENCE
Golley, et al (2007)	n=111 children age 6-9	Parent-led, family focused weight management program	Statistically significant percentage of boys that had reduction in BMI and waist circumference	Waist circumference is not an appropriate means of measurement per the AAP (2007)	1 (B)
Kitzman, K. M., et al (2010)	Meta-analysis comparing the results of 66 treatment-control and 59 alternate treatment comparisons	Evaluation of lifestyle interventions: diet, exercise, ect.	Lifestyle interventions prove to be effective treatment in different patients; parental involvement was found to be essential	Heterogenity of within study alternate treatment comparisons.	1 (A)
Wifley, et al. (2007)	N=14 randomized control trials	Lifestyle intervention focused on weight loss or weight control for youth <19	Lifestyle interventions produced significant treatment effects both following the intervention and in follow up	Lack of standardization of study components, dated	1 (B)
Hare, et al. (2012)	N=270 children age 4-7 in an urban community	Lifestyle modifications including cognitive behavioral techniques,	No significant findings between two groups in the lifestyle modifications	As recommended by the guidelines this is one of few studies that examines outcomes over a	1 (B)



		healthier food choices, reduced portion sizes, decreased sweetened beverages, increased physical activity	studied	longer period of time (12 months).	
Vine, et al (2012)	N=96 articles	Identification of areas of primary care provider role expansion.	This was more of a compilation of studies not statistically analyze.	Although a large number of studies were analyzed, no statistical findings were calculated or reported. Further the definition of the PCP role is vague	3 (B)
Hopkins, DeCristofaro, Elliott (2011)	Not specified	To identify barriers in PCPs' management of childhood obesity and offer resources to ease their efforts.	Many barriers like a lack of reimbursement, lack of knowledge, and lack of resources prevent PCPs from maximizing management of childhood obesity	Literature review details were not specified and no statistical analysis was completed.	3 (C)
Schwartz, R. P., et al (2007)	N=91 parents of overweight children	Motivational interviewing administered by a provider in one group and then both a provider and dietician in the intensive group	Reports decreasing BMIs but the findings were not significant	Participant retention. In the intensive group, 50% of parents dropped out.	2(C)

Branscum, P. & Sharma, M. (2010)	N=9 studies, specifically targeting Hispanic children	Analysis of various methods to treat and prevent childhood obesity	Only four studies were found to have statistical findings. However, the most success was recorded when participants were at higher risk, parents were involved, theory was used, staff was dedicated and the intervention was longer running	Only examined Hispanic children	1(B)
--	---	---	---	---------------------------------------	------

## **Appendix F**

### **Recruitment Script**

Hello, my name is \_\_\_\_\_. I am calling on behalf of Tri-City's "Eat Well, Live Actively" program. May I please speak to the guardian of\_\_\_\_\_.

I am calling today to inform you about a new program we are piloting at Tri-City. The "Eat Well, Live Actively" program is a childhood obesity treatment program. Your child qualifies as a potential candidate for this program. This is a unique program that focuses on treating childhood obesity from a family approach. Does this sound like something you are interested in hearing more about?

(If yes) "Eat Well, Live Actively" is a three-month program. During this time you and your child will be scheduled for two visits with your child's pediatrician: one at the beginning of the program and one at the end. You both will also be scheduled for two visits with the registered dietician. Participation in this aspect of the program is of no additional cost to you other than the co-pay you currently are responsible for.

The third component of "Eat Well, Live Actively" is bi-weekly attendance in YMCA-sponsored classes. The YMCA has trainers that are working specifically with Tri-City to offer their services. Classes are intended for both parent and child to attend. These classes will be offered from 4-5pm on Tuesdays and Thursdays. If you do not already have a YMCA membership, the YMCA is offering family memberships for \$25/month for "Eat Well, Live Actively" participants. If this is not feasible, scholarships are available.

If this is something you are interested in, I would like to invite you to the YMCA on the evening of (January 14/15) so we can get you and your child signed up at the YMCA and enrolled in the program.

**Appendix G**

## Parental Consent

Date:

Patient's name:

I, \_\_\_\_\_, acknowledge that my child \_\_\_\_\_ is enrolled in the "Eat Well, Live Actively" program at Tri-City Health Center. I also acknowledge that this program will be participating in a research project examining effective means to prevent and fight childhood obesity in our community. I am aware that while participating in this program is optional, requires my child and I to attend regular appointments with my child's physician, dietician and athletic trainer at the YMCA. I am also aware that my child's participation in this program is of no additional cost to myself or my child. Further, I am aware that my child's identity and their participation is strictly confidential. Lastly, I am aware that I may withdraw myself and/or my child from this program without negative repercussions. Therefore, I give my consent for my child's participation.

Guardian's Name:

Signature:

## **Appendix H**

### **Provider Reference Guide**

(AAP, 2007; Hopkins, DeCristofaro, & Elliott, 2011)

#### **Necessary Components:**

1. Anthropomorphic Data: Accurate Height, Weight, BMI, BP
2. Medical Risk Assessment:
  - a. Personal, family history (particularly parental obesity)
  - b. Patient growth trend analysis
3. Behavior Risk Assessment:
  - a. Diet
    - i. Breakfast consumed daily?
    - ii. Meal time at home? Around the Dinner table?
    - iii. Dietary food recall
  - b. Exercise
    - i. Minutes of outside play daily?
    - ii. Participation in organized sports?
    - iii. Family involvement?
  - c. Sedentary Lifestyle
    - i. Hours of screen time?
4. Assess and Address patient and guardian concerns.
5. Identify lifestyle goals to be addressed at follow-up
6. Appropriate Physical Exam

- a. Any co-morbid conditions?

#### 7. Diagnostic Labs: As Recommended According to BMI:

BMI	Test
>85 <sup>th</sup> -94%, no risk factors	Fasting lipid panel
>85-94 <sup>th</sup> %, +risk factors (family hx, HTN, hyperlipidemia, tobacco use)	Fasting lipid panel, AST/ ALT, fasting glucose
>95 <sup>th</sup> %, regardless of risk factors	Fasting lipid levels, AST/ ALT, fasting glucose

#### 8. Billing Codes according to Bright Futures

- a. Preventive Medicine, Individual Counseling (CPT Codes)
  - i. 99401—preventive medicine counseling or risk factor reduction intervention(s) provided to an individual; approximately 15min
  - ii. 99402—approximately 30 min
- b. Counseling Risk Factor Reduction and Behavior Change Intervention (ICD9-Codes)
  - i. V15.89—Other specific personal history presenting as hazards to health
  - ii. V65.3—Dietary Surveillance and Counseling
  - iii. V65.40—Counseling not otherwise specified
  - iv. V65.41—Exercise Counseling

## Appendix I

### American Academy of Pediatrics' (2007) Patient-Centered

### Communication Techniques for Primary Care Visits

Fifteen-Minute Obesity Prevention Protocol	
Step	Sample Language
Step 1. Assess	
Assess weight and height and convert to BMI	
Provide BMI information	We checked your child's BMI, which is a way of looking at weight and taking into consideration how tall someone is. Your child's BMI is in the range where we start to be concerned about extra weight causing health problems.
Elicit parent's concerns	What concerns, if any, do you have about your child's weight? "He did jump 2 sizes this year. Do you think he might get diabetes someday?"
Reflect/probe	So you've noticed a big change in his size and you are concerned about diabetes down the road. What makes you concerned about diabetes in particular?
Assess sweetened beverage, fruit, and vegetable intake, television viewing and other sedentary behaviors, frequency of fast food or restaurant eating, consumption of breakfast, and other factors	(Use verbal questions or brief questionnaires to assess key behaviors) Example: About how many times a day does your child drink soda, sports drinks, or powdered drinks like Kool-Aid?
Provide/elicit	
Provide positive feedback for behavior(s) in optimal range; elicit response; reflect/probe	You are doing well with sugared drinks. "I know it's not healthy. He used to drink a lot of soda, but now I try to give him water whenever possible. I think we are down to just a few sodas a week." So, you have been able to make a change without too much stress.
Provide neutral feedback for behavior(s) not in optimal range; elicit response; reflect/probe	Your child watches 4 hours of television on school days. What do you think about that? "I know it's a lot, but he gets bored otherwise and starts picking an argument with his little sister." So, watching TV keeps the household calm.
Step 2. Set agenda	
Query which, if any, of the target behaviors the parent/child/adolescent may be interested in changing or which might be easiest to change	We've talked about eating too often at fast food restaurants, and how television viewing is more hours than you'd like. Which of these, if either of them, do you think you and your child could change? "Well, I think fast food is somewhere we could do better. I don't know what he would do if he couldn't watch television. Maybe we could cut back on fast food to once a week."
Agree on possible target behavior	That sounds like a good plan.
Step 3. Assess motivation and confidence	
Assess willingness/importance	On a scale of 0 to 10, with 10 being very important, how important is it for you to reduce the amount of fast food he eats?
Assess confidence	On a scale of 0 to 10, with 10 being very confident, assuming you decided to change the amount of fast food he eats, how confident are you that you could succeed?
Explore importance and confidence ratings with the following probes:	
Benefits	You chose 6. Why did you not choose a lower number? "I know all that grease is bad for him."
Barriers	You chose 6. Why did you not choose a higher number? "It's quick and cheap and he loves it, especially the toys and fries." Reflection: So there are benefits for both you and him.

Step	Sample Language
Solutions	What would it take you to move to an 8? "Well, I really want him to avoid diabetes. My mother died of diabetes, and it wasn't pretty; maybe if he started showing signs of it; maybe if I could get into cooking a bit more."
Step 4. Summarize and probe possible changes	
Query possible next steps	So where does that leave you? or From what you mentioned it sounds like eating less fast food may be a good first step, or How are you feeling about making a change?
Probe plan of attack	What might be a good first step for you and your child? or What might you do in the next week or even day to help move things along? or What ideas do you have for making this happen? (If patient does not have any ideas) If it's okay with you, I'd like to suggest a few things that have worked for some of my patients.
Summarize change plan; provide positive feedback	Involving child in cooking or meal preparation, ordering healthier foods at fast food restaurants, and trying some new recipes at home.
Step 5. Schedule follow-up visit	
Agree to follow-up visit within <i>x</i> weeks/months	Let's schedule a visit in the next few weeks/months to see how things went.
If no plan is made	Sounds like you aren't quite ready to commit to making any changes now. How about we follow up with this at your child's next visit? or Although you don't sound ready to make any changes, between now and our next visit you might want to think about your child's weight gain and lowering his diabetes risk.



## **Appendix J**

### Family-Focused Interventions

#### Primary Care Providers & Registered Dietitians:

1. Use Motivational Interviewing in assessing parent and patient understanding of obesity and the consequences (Appendix 12)
  - a. Takes into account patient/parent readiness to change in a nonjudgemental questioning and reflective listening (AAP, 2007; Schwartz, et al., 2007)
2. Promote positive, assertive parenting approaches
  - a. Demonstrated as an effective parenting approach in this age group of patients (AAP, 2007; Davis, et al., 2007; Golley, et al., 2007)
  - b. Label reading, modified recipes, appropriate portion sizes
  - c. Limited screen time
  - d. Limited soda and fruit juices
  - e. Family Meals, including breakfast
  - f. Promote at least an hour of physical activity per day
3. Set realistic goals for the family, not just the child (for example, ‘The family will eat dinner together every week night.’) (Triple P International, 2013)
4. Offer supplemental material (for example, USDA MyPlate brochure) (Golley, et al., 2007)
  - a. Increases the likelihood of information being remembered correctly (NC Program on Health Literacy, 2013)

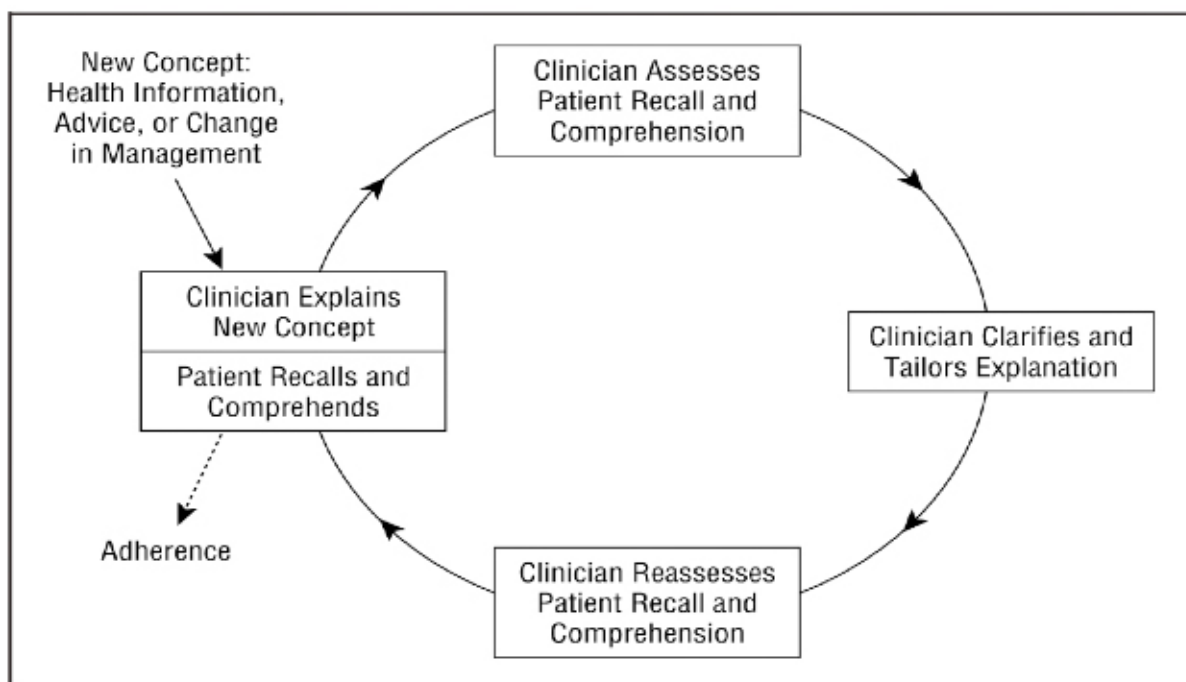
#### YMCA:

5. Parent-Participant exercise

- a. Parent can be a role model for child (Parents activeness is a strong predictor of child activeness in this age group (Davis, et al., 2007).
  - b. Embraces the Triple P value of the parent caring for themselves
- 6. Activities at both the YMCA and the local park (Golley, et al., 2007)
  - a. Demonstrate that being physically active as a family does not have to be in a gym
  - b. Designed as play, not exercise
  - c. Non-competitive games

**Appendix K**

## Xu (2012) Teach Back Method



## **Appendix L**

### **Weekly Sample Correspondence Content**

Subject Line: Weekly Summary

Objectives:

- 3-4 key topics

Patients Involved:

- List of patient's utilizing medical record number

Content Covered:

- Specifics that might be needed for the project manager might need to know to participate in "The Teach-Back Method"
- Links provided if appropriate

## **Appendix M**

### Teach-Back Method: Weekly Phone Call Follow-Up Template

Hello. This is \_\_\_\_\_ from Tri-City's "Eat Well, Live Actively" program. How are you doing today?

I am calling for our weekly follow-up as part of the program. How was your week?

How was your appointment with Dr. \_\_\_\_\_ and/or the dietician and the trainer at the YMCA?

What did you learn at the(se) appointment(s)?

How did this make you feel?

What questions do you have about this material?

Your chart states that your family has decided that you are going to (insert goal as identified during initial visit with PCP or RD). What have you done this week to help you achieve this goal?

What are your goals for next week?

Is there anything else I can do for you today?

**Appendix N****Participant Satisfaction Questionnaire**

1=not very much, 5=a lot

1. Did you like the Program?

1                      2                      3                      4                      5

2. How much did you learn?

1                      2                      3                      4                      5

3. Can you list 4 examples of information you learned during the “Eat Well, Live Actively” program?

1.

2.

3.

4.

4. Did you have fun?

1                      2                      3                      4                      5

5. Do feel that you know how to be healthier?

1                      2                      3                      4                      5

**Appendix O**

## Parent Satisfaction Questionnaire

1. How satisfied with the “Eat Well, Live Actively” program are you?

1=not very satisfied, 5=very satisfied

1                      2                      3                      4                      5

2. How much do you feel you and your child learned from the “Eat Well, Live Actively” program?

1=little, 5=a lot

1                      2                      3                      4                      5

3. Do you believe the “Eat Well, Live Actively” Program helped you and your child become healthier?

1=little, 5=a lot

1                      2                      3                      4                      5

4. Do you believe the “Eat Well, Live Actively” Program has influenced the lifestyle choices made by your family?

1=little, 5=a lot

1                      2                      3                      4                      5

5. Please identify one diet change that your family is making based on the “Eat Well, Live Actively” program.

6. Please identify one new physical activity your family is adopting based on the “Eat Well, Live Actively” program.

## Appendix P

### Plan Timeline

Table 3. Timeline.

Task	NOV	DEC	JAN	FEB	MAR	APRIL
Plan (intervention planning, meeting with stakeholders, training)	X	X	X			
Implementation			X	X	X	X
○ Recruitment			X			
○ YMCA Participation			X	X	X	X
○ 1 <sup>st</sup> visit with PCP/RD				X		X
○ 2 <sup>nd</sup> visit with PCP/RD						X
○ Weekly Phone Calls			X	X	X	X
Post-Evaluation						X
Pre-Test Evaluation			X			
Analyze						X



## Appendix Q

### Cost Analysis of “Eat Well, Live Actively”

#### Program Coordinator

- Average annual income in the San Francisco Bay Area is \$60,000 (Indeed, 2013).
- Assuming this project is replicated with the same timeline, the expected cost of hiring a Program Coordinator temporarily for six months would be **\$30,000**.

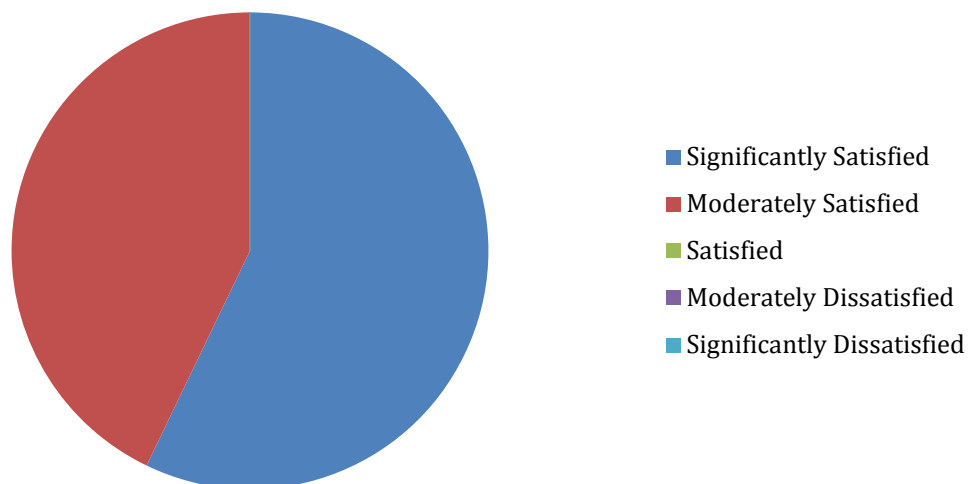
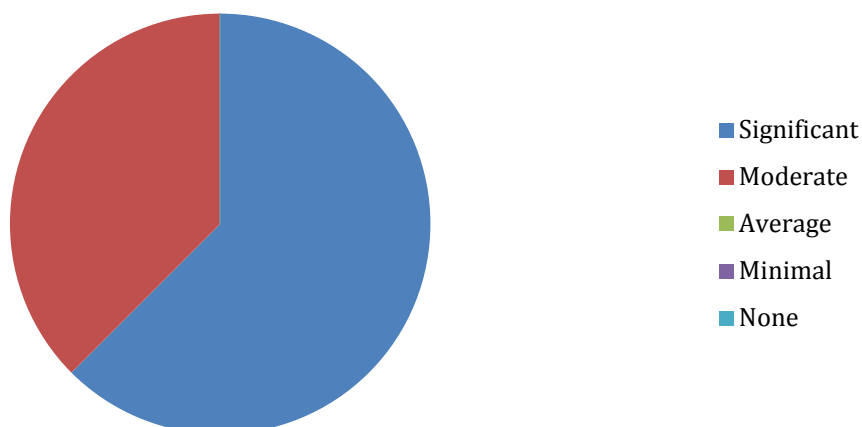
#### Athletic Trainer

- Average annual income in the San Francisco Bay Area is \$63,000 (Indeed, 2013).
- \$63,000 divided by 12 months = a monthly salary of \$5,250/month.
- As this program is three months long the projected cost of hiring an athletic trainer is **\$15,750**.

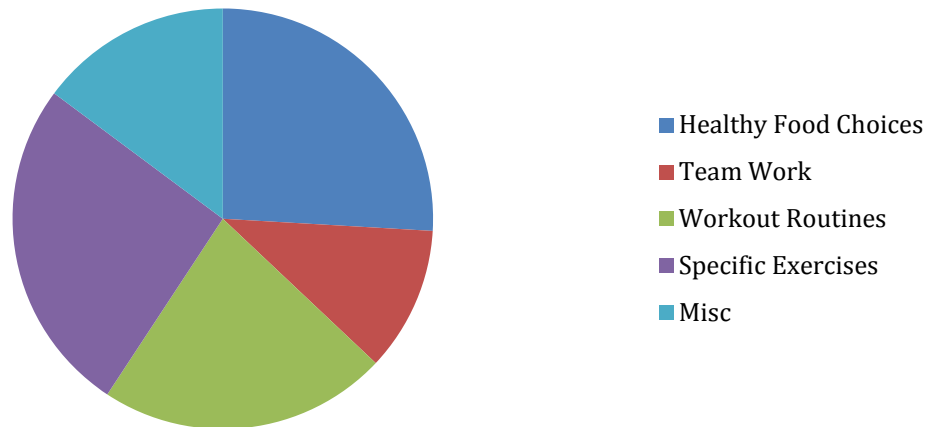
#### Registered Dietician

- Average annual income in the San Francisco Bay Area is \$72,000 (Indeed, 2013).
- \$72,000 divided by 12 months = a monthly salary of \$6,000/month.
- As this program is three months long the projected cost of hiring a registered dietician is **\$18,000**.

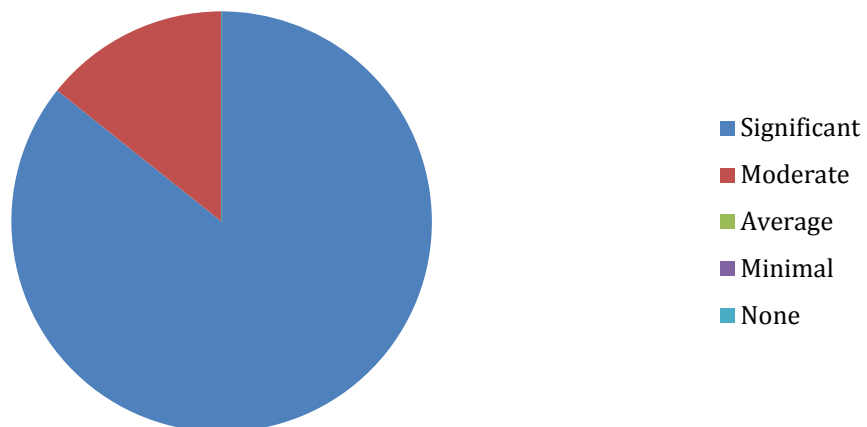
**Total Personnel Cost of “Eat Well, Live Actively”: \$63,750**

**Appendix R****Participant Satisfaction Survey Results****Participant Overall Program Satisfaction  
N=7****Participant Overall Perceived Knowledge  
Gained  
N=7**

### Participant Lifestyle Modifications Learned N=27

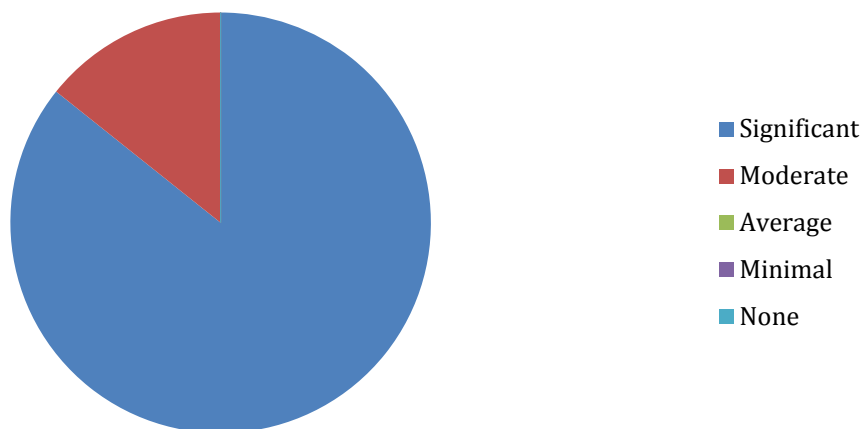


### Participant Overall Perceived Amount of Fun N=7



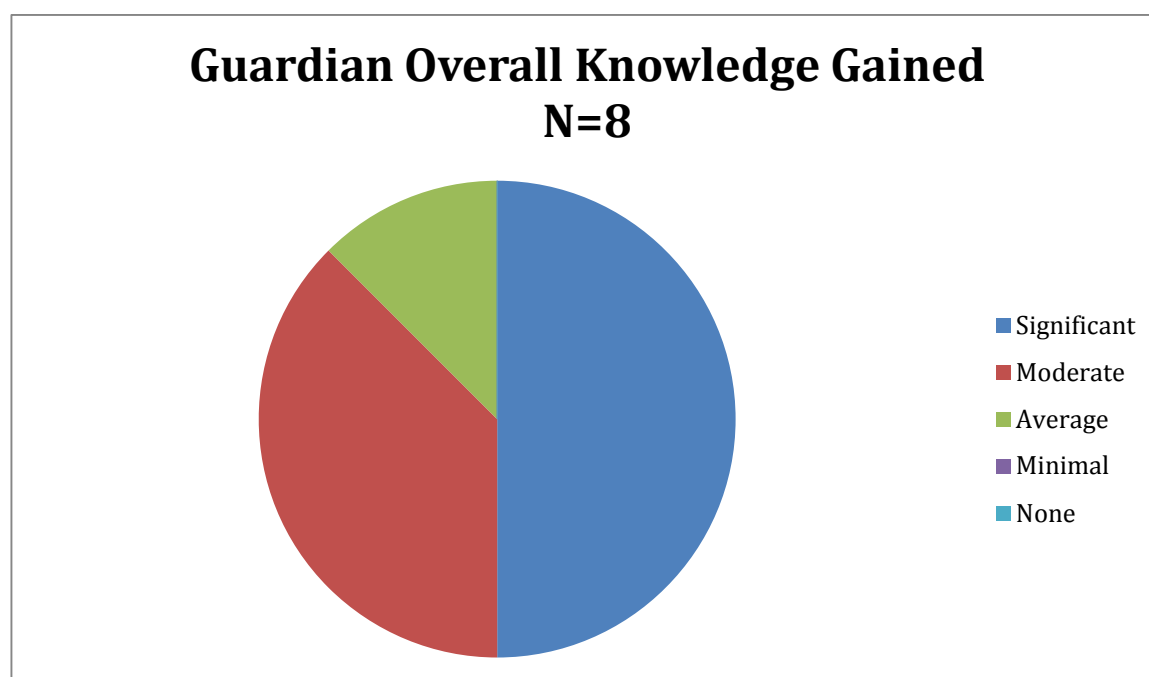
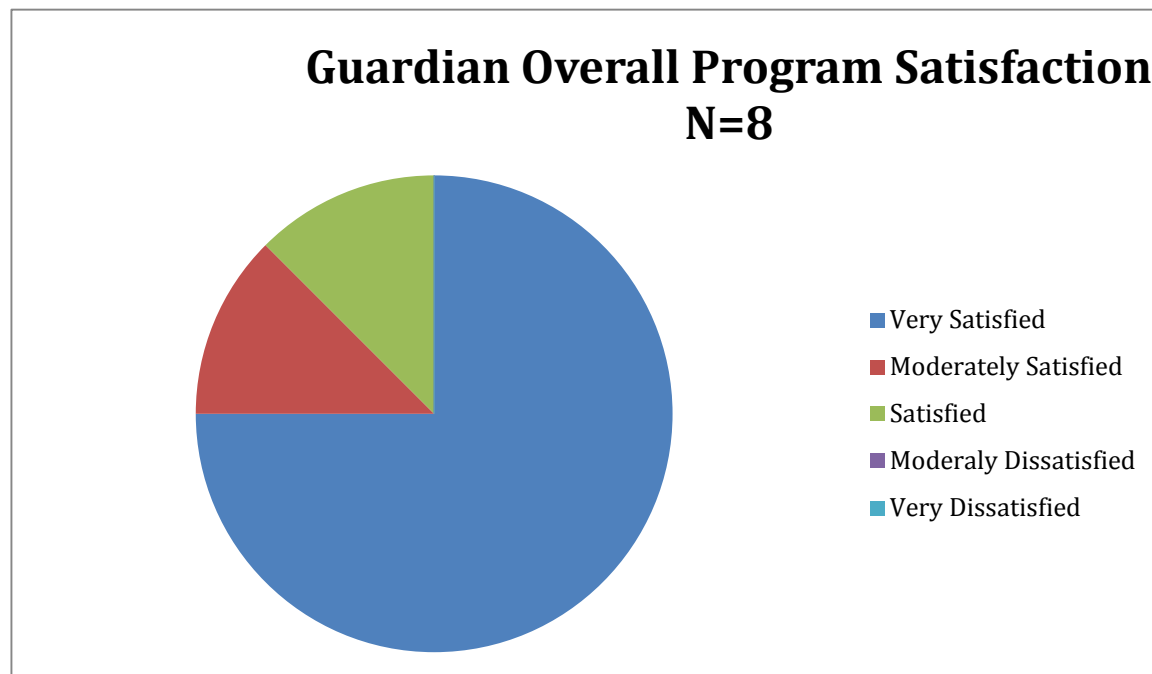
### Participant Overall Perceived Positive Impact on Health

N=7

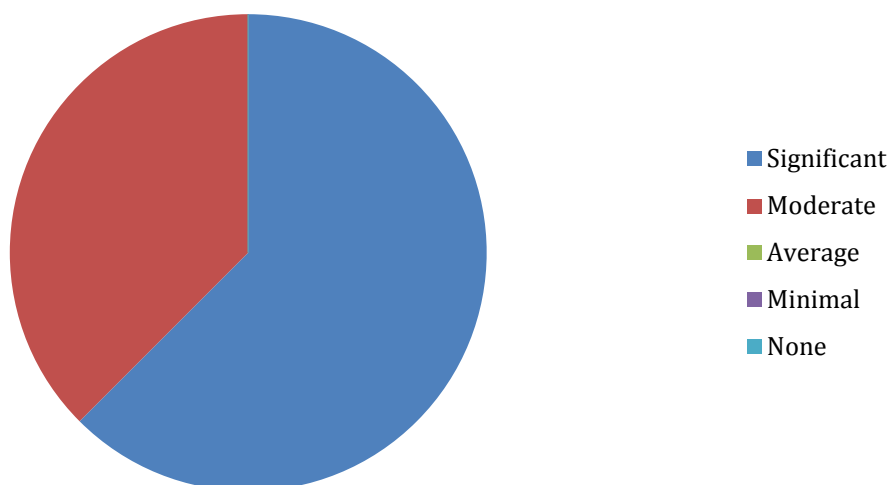


**Appendix S**

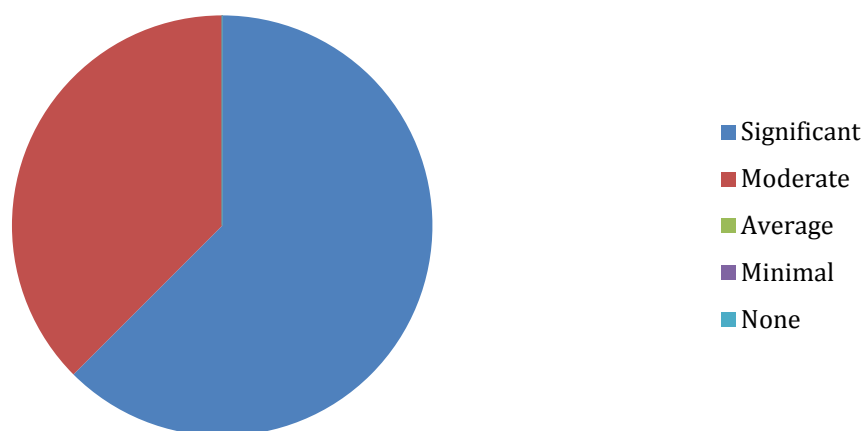
## Guardian Satisfaction Survey Results



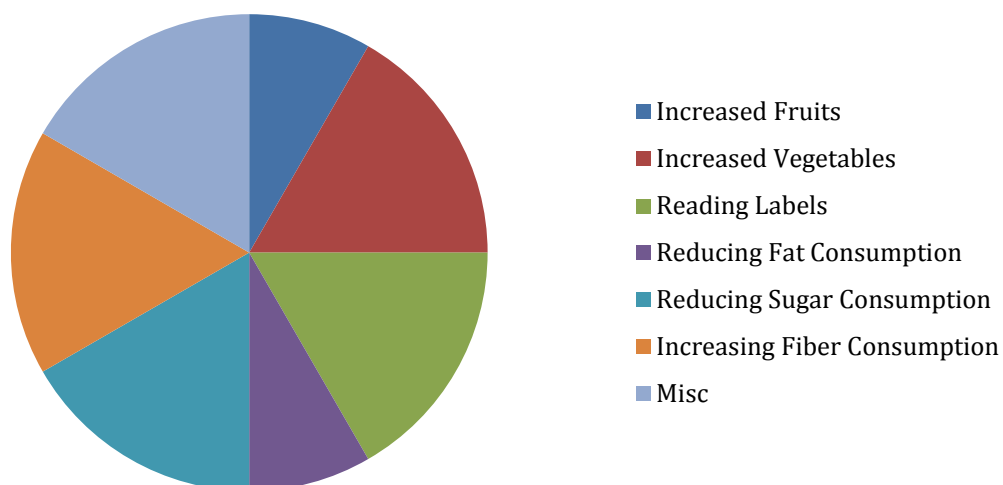
### Guardian Overall Impact on Health N=8



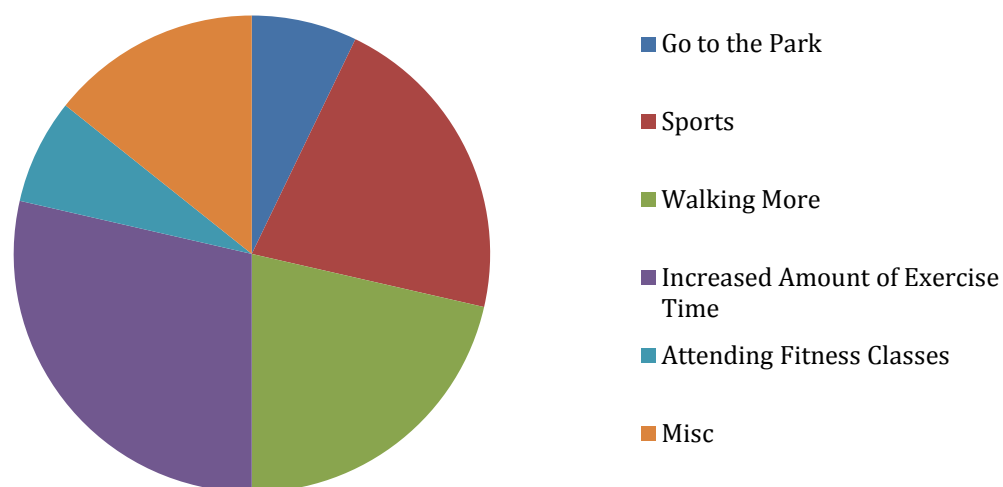
### Guardian Overall Influence on Lifestyle Choices N=8



### Guardian New Dietary Changes N=12



### Guardian New Physical Activity N=14



## Appendix T

### Learning & Behavior: Healthy Lifestyle Survey Results

Questions	Response Category	Response during Initial Visit	Response during Last Visit	Change
Do you eat dinner with your family at least x4/wk?	no	2	2	No change
	yes	2	2	No change
Do you eat fast-food 2 or more times/wk?	no	4	4	No change
Do you participate in physical activity on most days?	yes	4	4	No change
Do you skip breakfast more than x3/wk?	no	1	1	No change
	yes	3	3	No change
Do you skip dinner more than x3/wk?	no	4	4	No change
Do you skip lunch more than x3/wk?	no	4	4	No change
Do you take a multivitamin?	no	4	4	No change
Does your family watch TV during dinner?	no	2	2	No change
	yes	2	2	No change
How many "extras" do you have on a regular day?	2-4	2	4	Yes
	3+	2	0	Yes
How many cups of sodas, juice, and sports drinks do you drink on a normal day?	0-1	2	4	Yes
	1-2/day	2	0	Yes
How many dairy products did you eat daily?	2	1	1	No change
	2-3	3	3	No change
How many hours do you spend watching TV, playing video games, or on the computer?	2+hr/day	2	2	No change
	4+	2	2	No change
How many minutes of physical activity do you participate in on most days?	45	1	1	No change
	45-60	1	1	No change



	60	2	2	No change
How many servings of fruits did you eat daily?	1-2	2	2	No change
	2-3	2	2	No change
How many servings of protein do you eat daily?	5+oz	2	2	No change
	6+	2	2	No change
How many servings of veggies did you eat daily?	1-2	2	2	No change
	3-4	2	2	No change
How many servings of whole grain do you eat daily?	<50%	4	4	No change

## Appendix U

### Anthropomorphic Data

DOB	Gender	WT Change	BMI Change	Baseline Anthropometrics				Post-Intervention Anthropometrics			
				Height	Weight	BMI	BMI%	Height	Weight	BMI	BMI%
1/30/00	F			63.3	167.0	29.35	97.06				
9/9/02	F			60.5	137.0	26.31	97.13				
1/10/14	M	4.0	0.0095	61.5	126.0	23.42	95.91	62.0	130.0	23.77	95.00
2/19/02	F	-2.1	0.0018	61.0	154.1	29.11	98.26	60.5	152.0	29.19	98.08
2/19/02	F	1.0	0.0005	60.5	166.0	31.88	98.98	60.5	167.0	32.07	98.93
7/7/00	F	0.0	(0.0001)	62.5	259.0	46.61	99.70	63.0	259.0	45.87	99.71
8/10/02	F	7.0	(0.0008)	60.0	177.0	34.56	99.41	60.0	184.0	35.93	99.49
12/28/00	M			63.5	213.0	37.14	99.49				
4/9/00	M			68.3	222.0	33.50	99.13				
4/16/02	F			66.0	173.0	27.92	97.83				
8/28/00	F	5.8	0.0076	61.5	177.2	32.94	98.75	61.5	183.0	34.01	98.00
10/19/01	F			57.0	171.0	37.00	99.49				